

CLAIMS:

1. A method comprising:
creating a first generation check disk from a master without destroying the master;
5 testing the check disk; and
creating a first generation stamper from the master when the check disk is
acceptable.

2. The method of claim 1, further comprising delivering the check disk to a
10 customer, and creating the first generation stamper when the customer indicates
acceptance of the check disk.

3. The method of claim 1, wherein creating the first generation check disk
comprises:
15 coating a master surface with a release layer;
coating a photopolymer layer on a check disk substrate;
contacting the photopolymer layer with the release layer;
curing the photopolymer layer to bond the photopolymer layer to the check disk
substrate and to preserve a pattern of the master surface in the photopolymer layer; and
20 separating the photopolymer layer from the release layer.

4. The method of claim 3, wherein creating the first generation check disk further
includes depositing at least one of the following on the photopolymer layer: a reflective
material, a phase change material, and a magneto-optic material.

5. The method of claim 3, wherein creating the first generation check disk further
includes cutting the check disk to size.

6. The method of claim 3, further comprising curing the photopolymer layer without
30 masking the photopolymer layer so that the photopolymer layer is cured to substantially
the entire surface of the check disk substrate.

7. The method of claim 1, further comprising creating the master.

8. The method of claim 1, wherein testing the check disk includes testing feature
5 geometries of the check disk.

9. The method of claim 1, wherein testing the check disk comprises testing the check
disk against one or more criteria, wherein the check disk is acceptable when it satisfies
the criteria.

10. The method of claim 1, wherein testing the check disk includes measuring read
back signals in terms of at least one parameter selected from the group consisting of:
push-pull, jitter, burst error rate (BER), asymmetry, and carrier noise ratio (CNR).

11. The method of claim 1, wherein the master is a first master, the method further
comprising creating a second master when the check disk is not acceptable.

12. The method of claim 11, wherein the process of creating a second master includes
adjusting master feature geometries to account for errors determined during the testing of
the check disk.

13. The method of claim 11, further comprising:
creating another first generation check disk from the second master without
destroying the second master;
25 testing the check disk created from the second master; and
creating a first generation stamper from the second master when check disk
created from the second master is acceptable.

14. The method of claim 1, further comprising:
30 creating a second generation stamper from the first generation stamper; and

using the second generation stamper in a mass production process to create a number replica disks.

15. The method of claim 14, wherein the replica disks have feature geometries substantially similar to the feature geometries of the check disk.

16. The method of claim 14, wherein the mass production process is an injection molding process.

17. The method of claim 14, wherein the mass production process is a rolling bead process.

18. The method of claim 1, further comprising:
creating first and second first generation check disks from first and second masters without destroying the masters, wherein each of the first and second check disks respectively correspond to one side of a two-sided optical data storage medium;
testing the first and second check disks; and
creating first and second first generation stampers from the first and second masters when check disks are acceptable.

19. The method of claim 18, further comprising:
creating first and second, second generation stampers from the first and second first generation stampers; and
using the first and second, second generation stampers in a mass production process to create a number two-sided replica disks.

20. A method comprising:
creating a master;
creating a check disk from the master without destroying the master by:
coating a master surface with a release layer;
coating a photopolymer layer on a check disk substrate;

contacting the photopolymer layer with the release layer;
curing the photopolymer layer to bond the photopolymer layer to the
check disk substrate and to preserve a pattern of the master surface in the
photopolymer layer; and

5 separating the photopolymer layer from the release layer;
testing feature geometries of the check disk;
creating a first generation stamper from the master when check disk is acceptable;
creating a second generation stamper from the first generation stamper when the
check disk is acceptable; and
10 using the second generation stamper in a mass production process to create a
number replica disks when the check disk is acceptable.

21. The method of claim 20, wherein the master is a first master, the method further
comprising creating a second master when the check disk is not acceptable, wherein the
15 process of creating a second master includes adjusting master feature geometries to
account for errors determined during the testing of the check disk.

22. The method of claim 21, further comprising:
creating another first generation check disk from the second master without
20 destroying the second master;
testing the check disk created from the second master; and
creating a first generation stamper from the second master when check disk
created from the second master is acceptable.

23. A set of optical data storage disks comprising:
a first generation check disk formed from a master without destroying the master,
wherein the first generation check disk includes a polymer substrate and a photopolymer
layer that forms a pattern which preserves a pattern exhibited on a surface of the master;
and

a number of third generation replicated disks, wherein each third generation replicated disk defines a pattern substantially similar to the pattern formed in the photopolymer layer of the first generation check disk.

2025.10.20 09:00